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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,962	11/18/2003	Takashi Ohsumi	OKI 389	4582

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EXAMINER

CLARK, JASMINE JHIHAN B

ART UNIT PAPER NUMBER

2815

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/714,962	Applicant(s) OHSUMI, TAKASHI	
	Examiner Jasmine J Clark	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 1, 4, 11, 14, 17 and 20 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5-10, 12, 13, 15, 18 and 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/18/03</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, 11, 14, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chakravorty (US 6,181,569 B1).

Chakravorty shows a structure of a semiconductor device having a semiconductor substrate (see Fig. 4) formed with a plurality of pads 304, and wiring electrically connecting the electrode pads 304 to external electrodes (not shown); the layers of the wiring each having depressed portions located at via holes 309 formed in the insulating layers; the wiring formed in a plurality of layers (see Fig. 5), the

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semiconductor device comprising: insulating layers interposed between the layers of the wiring, and between the lowermost layer of the wiring and the semiconductor substrate; the layers of the wiring each having depressed portions located at via holes formed in the insulating layers, the depressed portions connected to the lower layer of the wiring and/or the electrode pads; bump electrodes 313 formed on the depressed portions of the uppermost layer of the wiring; external electrodes (see Fig. 8d) formed on the top surfaces of the bump electrodes 313; and a sealing layer 312 formed over the uppermost layer of the wiring so as to expose the top surface of the bump electrodes 313. However, Chakravorty fails to show an external circuit board including conductive patterns with the connection from the wiring. Saito shows in Fig. 3 a connection between a semiconductor element 4 to a printed circuit board with electrodes 6. Hence, it would have been obvious for Chakravorty to include a circuit board, as is notoriously known.

Concerning claims 11 and 17, please see the above discussion under claim 1.

Allowable Subject Matter

2. Claims 2, 3, 5-10, 12, 13, 15, 18, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The applied reference(s) fail to teach and/or suggest the limitations as set forth in claims 2, 3, 5-10, 12, 13, 15, 18 and 19.

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3. Claim 16 is allowed.

The following is an examiner's statement of reasons for allowance: the applied reference fails to further teach and/or suggest the limitations as set forth in claim 16, for example wherein the distances from a neutral point of a thermal stress of the semiconductor device to an arbitrary pair of bump electrodes among electrodes are set as H_1 and H_2 , the length of the pair of bump electrodes are set as H_1 and H_2 , the length of the pair of bump electrodes are determined so as to satisfy : when $L_1 > L_2$, then $H_1 \leq H_2$.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. The references of interest are cited: Regarding the wiring layers and external bumps, please see Satoh et al. (US 6,621,154 B1), Kikuchi (US 2003/0102551A1), Shinogi et al. (US 6,479,900 B1), Matsuda et al. (US 5,726,489), Sawai et al. (US 5,554,887), Yamaji et al. (US 6,159,837), and Kawashima (US 6,559,540 B2).

Telephone Inquiry Contacts

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jasmine J Clark whose telephone number is (571) 272-1726. The examiner can normally be reached on Flex.

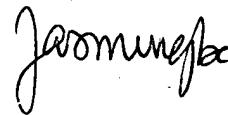
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jjbc/05/29/04

**JASMINE CLARK
PRIMARY EXAMINER**

A handwritten signature in cursive script, appearing to read 'Jasmine Clark', is positioned below the printed name and title.